WE CLAIM:

1. A tunable dispersion compensating device for optical communications systems, comprising:

a compliant support block having a longitudinal axis and a load-receiving surface oriented substantially parallel to said longitudinal axis, said load receiving surface being suitable to receive an applied load in a direction substantially orthogonal to said longitudinal axis; and

a Bragg-grating fiber disposed in said compliant support block and extending substantially along and at an angle to said longitudinal axis of said compliant support block.

2. A tunable dispersion compensating device according to claim 1, further comprising a support frame, said compliant support block being disposed in said support frame,

wherein said support frame is open on opposing longitudinal ends suitable to allow said compliant support block to expand along said longitudinal axis in response to said applied load in said direction substantially orthogonal to said longitudinal axis.

3. A tunable dispersion compensating device according to claim 1, further comprising a substantially rigid bar disposed in said compliant support block between said Bragg-grating fiber and said load-receiving surface of said compliant support block.

4. A tunable dispersion compensating device according to claim 3, wherein said substantially rigid bar is an aluminum bar.

5. A tunable dispersion compensating device according to claim 1, further comprising a plurality of microspheres disposed in said compliant support block between said substantially rigid bar and said Bragg-grating fiber.

6. A tunable dispersion compensating device according to claim 5, wherein said microspheres are glass microspheres.

7. A tunable dispersion compensating device according to claim 5, further comprising a support frame, said compliant support block being disposed in said support frame

frame,

wherein said support frame is open on opposing longitudinal ends suitable to allow said compliant support block to expand along said longitudinal axis in response to said applied load in said direction substantially orthogonal to said longitudinal axis.

8. A tunable dispersion compensating device according to claim 7, further comprising a micrometer assembly attached to said support frame proximate said substantially rigid bar,

wherein said micrometer assembly comprises a micrometer screw member adapted to apply a load to said Bragg-grating fiber, transferred through said substantially rigid bar.

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9. A tunable dispersion compensating device according to claim 8, wherein said micrometer assembly further comprises a second micrometer screw member adapted to apply a load to said Bragg-grating fiber, transferred through said substantially rigid bar.

10. A wavelength division multiplexed optical communication system, comprising:

a plurality of optical transmitters;

an optical multiplexer in optical communication with said plurality of optical transmitters;

a signal transmission waveguide in optical communication with said optical multiplexer;

a dispersion compensating unit in optical communication with said signal transmission waveguide;

an optical demultiplexer in optical communication with said signal transmission waveguide; and

a plurality of optical receivers in communication with said optical demultiplexer,

wherein said dispersion compensating unit comprises:

a compliant support block having a longitudinal axis and a load-receiving surface oriented substantially parallel to said longitudinal axis, said load-receiving surface being suitable to receive an applied load in a direction substantially orthogonal to said longitudinal axis, and

a Bragg-grating fiber disposed in said compliant support block and extending substantially along, and at an angle to said longitudinal axis of said compliant support block.

11. A method of making a tunable dispersion compensating device for optical communications systems, comprising:

disposing a Bragg-grating fiber into an elongated mold;

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pouring support material into said elongated mold, said support material being compliant when it sets; and

attaching a load-supplying assembly to said support material.

12. A method of making a tunable dispersion compensating device for optical communications systems according to claim 11, further comprising mixing microspheres into said support material prior to said pouring said support material into said elongated mold.

13. A method of making a tunable dispersion compensating device for optical communications systems according to claim 12, wherein said microspheres are glass microspheres.

14. A method of making a tunable dispersion compensating device for optical communications systems according to claim 12, further comprising precoating said Bragg-grating fiber with said support material prior to said pouring said support material into said elongated mold.

15. A method of making a tunable dispersion compensating device for optical communications systems according to claim 11, wherein said support material is a polymer material.

16. A method of making a tunable dispersion compensating device for optical communications systems according to claim 11, wherein said load-supplying assembly comprises a micrometer assembly and a substantially rigid bar.

17. A method of making a tunable dispersion compensating device for optical communications systems according to claim 11, wherein said Bragg-grating fiber is disposed with one end proximate a bottom surface region of said elongated mold and a longitudinally opposing end distal from a corresponding bottom surface region of said elongated mold so

that said Bragg-grating fiber is inclined with respect to said top surface of said compliant material.

18. A tunable dispersion compensating device for optical communications systems, comprising:

a compliant support block defining a load receiving surface, said compliant support block comprising a plurality of microspheres and a compliant material; and

a Bragg-grating fiber disposed in said compliant support block.

19. A tunable dispersion compensating device according to claim 18, wherein said microspheres are glass microspheres and said compliant material is selected from a polymer material.